FORMATION AND DEVELOPMENT OF MACHINE TRANSLATION

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Abstract. *This survey of the present demand and use of computer-based translation software concentrates on systems designed for the production of translations of publishable quality, including developments in controlled language systems, translator workstations, and localisation; but it covers also the developments of software for non-translators, in particular for use with Web pages and other Internet applications, and it looks at future needs and systems under development. The final section compares the types of translations that can be met most appropriately by human and by machine (and computer-aided) translation respectively.*

KEYWORDS*: machine translation, computer-aided translation, translator workstations, multilingual systems*

Machine (computer, automatic) translation is a written translation, production is also a written text. Its creator is not an interpreter, but offers a computer program that controls it. The formation of machine translation is connected with the emergence of the computer. In the 17th century, the philosophers G.V. Leibniz and Descartes put their power and presented the problems of codification of the relationship of words. Charles Babbage (1791-1871) expressed the first idea about the possibility of machine translation in his 1836-1848 project on digital analytical machines, the mechanical prototype of electronic digital machines that appeared 100 years later.

In the 30s of the 20th century, "translator machines" began to be used in practice. Also, in 1924, in Estonia, A. Vaher published his theoretical views on the implementation of mechanical translation in the newspaper "Vaba Maa". In

France, George Astrouni proposed the use of automatic bilingual dictionaries and succeeded in obtaining a patent for the development of machine translation known as "with a mechanical brain" [1;34].

In 1933, P.P.Smirnov Troyansky, the author of the linguistic arithmetic meter, created a system based on the Esperanto language, which includes the method of distribution between languages with grammatical control and a linguistic dictionary. This system includes three stages:

at the first stage, the editor organizes the words in the main language and defines the logical forms and syntactic functions of the units;

in the second step, the machine converts these forms into the language being translated;

in the third step, the editor moderates the result. The scientist's program remains unknown until the 50s of the 20th century, when computers became popular. After the initial ideas about machine translation, the history of machine translation emerged as an applied science in the late 1940s. Its theoretical basis was the view of language as a codified system (late 40s - early 50s).

The first pioneers of machine translation were mathematicians and engineers. In the late 1940s, the creation of IBM in the USA was based on the theory of coding designed to perform cryptographic tasks. In March 1947, cryptographer Warren Weaver wrote to Norbert Wiener about machine translation: *I have a text in front of me which is written in Russian but I am going to pretend that is really written in English and that it has been coded in some strange symbols. All I need to do is strip off the code in order to retrieve the information contained in the text*:

in the first step, the main text is translated into the intermediate language, and in the second step, its result is translated into the next language. In 1948, the first experiments on machine translation were conducted by A. Booth and R. Richans. Immediately after that, the work on its financing began.

Initially, the implementation of machine translation was supported by the military. Special attention was paid to the translation of Russian-English texts in the USA and English-Russian texts in the former Soviet Union.

At the same time, in 1950, the English mathematician A. Turing's research on consciousness made a big change in the history of machine translation. In his scientific views, the issue of the machine being able to think, that is, the machine's ability to communicate like a human, was raised. This point of view of the scientist indicated the need for deep research on artificial intelligence[4;32].

At the same time, the investigation of natural language processing by computers became the focus of research in cybernetics for the next decade: on the one hand, mathematicians, programmers, computer engineers, and on the other hand, linguists tried to conduct research on machine translation. The first scientific and practical conference on machine translation was held at the Massachusetts Institute of Technology in 1952. On January 7, 1954, the first IBM II machine translation program was created in cooperation with Georgetown University in New York. The program for translation from Russian to English was tested in practice within the field of chemistry, where 49 sentences were selected, limited to 250 lexical units and 6 grammatical rules.

In the 1990s, the history of machine translation underwent major changes. This was caused by the introduction of new technologies and the use of statistical methods, the concept of connectionism and neural sets. In July 1990, the PC Forum personal computer exhibition opened in Moscow, where the first commercial machine translation software known as PROMT (Programmer's Machine Translation) was presented in Russia.

In 1991, the combined programs Transit (STAR), Translation Manager (IBM), PTT (Canadian translation Services) and Optimizer (Euro-lang) created a translator workstation. In 1992, PROMT, the only non-American company, won the NASA competition. PROMT began to appear under the new name STYLUS, which translates from English, German, French, Italian and Spanish into Russian and from Russian into English, and in 1993, the world's first machine translation

system for Windows was created based on STYLUS. At this time, research was conducted in Germany on a project known as Verbmobil[3;30].

Currently, many companies in the world are engaged in the processing of commercial software: Systran (abbreviation of "System of translation"), IBM, L&H (Lernout & Houspie), Language Engineering Corporation, Transparent Language, Nova Incorporated, Trident Software, Atril, TRADOS, Caterpillar Co. ., LingvoWare, Ata Software, Lingvistica, Pragma are among them.

Among such programs, it is appropriate to include the version of Retrans Vista, which translates Russian texts into English. Its dictionary contains not only the meanings of millions of phraseological expressions, but also the phrases used in everyday speech. In addition, the program has a conceptual analysis that automatically extracts vocabulary words from the text.

The vocabulary of the Retrans Vista system consists of phraseological units and terms related to natural sciences, technology, economy, business, politics. There are approximately 3.4 million lexemes in the machine dictionary, of which 1.8 million are Russian-English and 1.6 million are English-Russian lexemes. 20% of the vocabulary consists of lexemes, 80% of fixed phrases with an average "length" of 2.2 words.

Now it is possible to use special sites for automatic translation through the Internet: www.freetranslation.com, http://www.alphaworks, etc.

To date, machine translation includes several concepts:

- machine-assisted human translation (MAHT) - use of computer electronic dictionaries and instructions included in the translation of text by a person;

- computer assisted translation (computer assisted translation - CAT) - serves to translate the text by means of a computer and distinguish the main concepts understood in it;

- human-assisted machine translation (HAMT) - assignment of editing tasks by a human resource to the translation carried out through computer software;

- fully automatic machine translation (FAMT) - performing both translation and editing functions of the text through the translator program [2; 40-42].

To sum up, it is worth noting that machine translation, which is studied as a field of computational linguistics, is one of the necessary fields for every developing society. Positive and negative comments will serve to improve it.

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